Keller. Extract the oil with ether, and shake the powder with ammoniated ether-chloroform. Evaporate to dryness, take up with ether-chloroform, add water, and titrate with $\frac{N}{10}$ HCl. (Oest. Zts. 93, 563. A. J. Ph. 94, 43. Proc. 94, 529 & 550.)

Schwickerath. With more or less modified Prollius' mixture. (Ph. Rdsch. N. Y. 94, 58 & 139. Bull. Ph. 94, 56. Proc. 94, 550.)

Smith. Exhaust with dilute acetic acid, evaporate to dryness, dissolve in a small quantity of ammoniated alcohol, and shake out with a large quantity of ether-chloroform. Titrate with $\frac{N}{10}$ HCl. (A. J. Ph. 96, 189.)

Indicators. Value. Kebler & La Wall (A. J. Ph. 95, 505 & 506. Proc. 95, 192).

Copper. P. c. (Ph. Ztg. 94, 30. Proc. 94, 566.)

(Oleata.)

The English name does not conform to the rule elsewhere adhered to, to put the basylous or metallic name first. (Ph. J. & Tr. 93, Sept. 242.) This criticism is at fault, because the official oleates, even that of zinc, are not absolutely definite salts, but mixtures of the real oleates with oleic acid.

Oleatum Hydrargyri.

The excess of free oleic acid is too large. Prepared by double decomposition would be preferable. Beringer (A. J. Ph. 93, 601).——Edel favors the plan with double decomposition (with oleate of potassium); he also gives a table showing the amount of oleic acid to be added to the normal oleate, in order to get a certain p. c. (W. Dr. 94, 85. Proc. 94, 590.)

Williams places the mortar in boiling water, and heats in it the oleic acid to 38° C., whereupon the oxide is sifted into it, and stirred until dissolved. He prefers, however, double decomposition. (Ch. & Dr. 94, 273. Proc. 94, 589.)

Oleatum Zinci.

The impalpable powder, obtained by precipitation from a solution of an alkaline oleate and zinc sulphate, is preferable. Beringer (A. J. Ph. 93, 602).——Caspari (Pharmacy, p. 384).——Patch (Proc. 93, 86).——Hallberg (Proc. 93, 96).

(Oleoresinæ.)

The complete exhaustion by ether is unnecessarily wasteful of ether. Beringer (A. J. Ph. 93, 602).

Acetone would be a better menstruum for several of them. Beringer (A. J. Ph. 92, 145).——Caspari (Pharmacy, p. 279).

Oleoresina Aspidii.

The color is yellowish-green; a pure green color denotes the presence of copper. Peters (Ap. Ztg. 93, 594. A. J. Ph. 94, 37).

Copper. P. c. (Ph. Ztg. 94, 30. Proc. 94, 566.)——Beckurts, Weppen & Luders (Ap. Ztg. 93, 594 & 722. Proc. 94, 569 & 570).

By using acetone, Caspari obtained 18 p. c. of oleo-resin. (Pharmacy, p. 280.)

Oleoresina Capsici.

Caspari advises not to carry the percolation to complete exhaustion, because of the large amount of fat present. He states, that when percolated slowly, 150 Cc. of the percolate will have practically exhausted 100 Gm. of the drug. (Pharmacy, p. 280.)

Oleoresina Cubebæ.

When prepared from the unripe berries, it is greenish; from the ripe berries, brownish. Emanuel (A. J. Ph. 94, 360).

Identity. Spread a small quantity on a porcelain plate, and pass a glass-rod dipped in sulphuric acid over it, when a red color will appear. Bourquelot (J. de Ph. & Ch. 95, 361. Merck, Report, 95, 222. Proc. 95, 533).

Caspari obtained 25 p. c. by using acetone. (Pharmacy, p. 280.)

Oleoresina Zingiberis.

Yield from different varieties (Jamaica, "Race," African). Davis (A. J. Ph. 95, 520).

(Olea Pinguia.)

Refractive Indices. Edwards (Proc. 93, 150).

Constants, and value of the tests proposed. Thomson & Ballantyne (J. Ch. Soc. 92, 547. Proc. 93, 892.)

Purity. Jean recommends to test the purity by the solvent power on acetic acid (1.056). (A. J. Ph. 92, 516. Proc. 93, 894.)

Purification. Shake with decoction of quillaya, and pass through granulated charcoal. Toellner (Nat. Dr. 93, 170. Proc. 94, 1176).

Rancidity prevented. Villon strongly recommends to shake the oils with a concentrated solution of "algesin," allowing to settle for 24 hours, decant and filter. (Ph. Ztg. 94, 743. W. Dr. 95, 60.)

Iodine Absorption. Welmans proposes a more permanent solution:—Dissolve 25 Gm. of iodine and 30 Gm. of mercuric chloride in

500 Cc. of ether, and make up to one liter with acetic acid. (Ph. Ztg. 93, 221. A. J. Ph. 93. 382. Proc. 94, 1174.)——Gautter calls attention to the fact that the iodine absorption figures vary in direct ratio to the amount of mercuric chloride, and therefore recommends to leave out the mercuric chloride, and to use only a solution of iodine in carbon tetrachloride. (Suedd. Ap. Ztg. 93, 133, 145, 265. A. J. Ph. 93, 455. Proc. 94, 1173.)

Castor Oil. Mix the suspected oil with 3 volumes of vaselin oil, and keep at a temperature of 10 to 15° C. Castor oil not being miscible with vaselin oil, the mixture will separate in two layers, the lower one of which is castor oil. Morpurgo (Ph. Ztg. 94, 545).

Differentiation of Fatty and Vaselin Oils. Gawalowski & Katz find that the solubility in ether and in alcohol, or in mixtures of both, may be made use of to distinguish between the different oils. To a 25 p. c. solution of the oil in ether, which has been tinted with alkannin, add alcohol drop by drop until the clear solution begins to get turbid. The amount of alcohol necessary will vary with the different oils. (Ap. Ztg. 96, 569.)

(**Olea Volatilia.**)

Refraction Indices. Edwards. These are useful for detecting admixture of alcohol, but not with all oils for the detection of oil of turpentine, and not at all for detecting chloroform. (Proc. 93, 151.)

Optical Tests. These are given for several of the oils. A polaristrobometer is hardly to be found in an American pharmacy, and this instrument gives very unreliable results in the hands of those not accustomed to its use. Beringer (A. J. Ph. 93, 602).

Rotatory Power. Kauffmann remarks upon the changes caused by light, heat and age. (Ph. Era, 94, xii. 420.)

Reactions with stannous chloride. Hirschsohn (Ph. Zts. Russl. 96, 65 & 81).

Reactions with a solution of dimethylaniline-violet in acetic acid and alcohol. Perrot (Oest. Zts. 92, 802).

Tests. Value. The saponification number is the only method yet devised, which appears to form a really satisfactory test. The iodine number comes next. But as to the fractional distillation, relative density, rotatory power, refractive index, color reactions and free acidity test, these are for several reasons unsatisfactory. Detection of adulteration is one thing, and determination of purity is another thing. No satisfactory test can be devised, until two factors are known. 1. Action of tests on oils of unimpeachable purity. 2. A knowledge of the constituents of the oils. Jowett (Ph. J. & Tr. 93, Mrch. 774. Proc. 93, 870).

Alcohol. A small fragment of fuchsin is wrapped in a pellet of cotton-wool, and placed in the upper part of a long, dry test tube, which contains a little of the oil. On heating, the alcohol, if present, will evaporate first, and dissolve some of the fuchsine, which will dye the cotton-wool. Ph. Helvet. (Ph. Rdsch. N. Y. 94, 85.)

In pills. With benzoin, borax and glycerin. Goetting (Ph. Rdsch. N. Y. 94, 85).

Oleum Adipis.

Soluble in alcohol, ether and chloroform.

The test of Hauchcorne (with somewhat diluted nitric acid) which seems to be very reliable in the case of olive oil, will not answer in the case of lard oil, as it gives with the latter a reddish-brown color. Power (Circular No. 109, p. 615).

Oleum Æthereum.

Specific Gravity. 1.096. Merck (Index, p. 173).
Boiling Point. 280° C. Merck (Ibid.).

Oleum Amygdalæ Amarum.

Specific Gravity. 1.045 to 1.060. Fritzsche Bros. (Catal. p. 9). The high specific gravity occasionally noticed is due to benzonitrile, which is liable to split up with the production of HCy. Schimmel & Co. (Ph. Post, 93, 297. Proc. 878.)

Artificial Oil. Hold a piece of clean copper wire, with a looped end, in a non-luminous flame until no color is imparted to the flame, and allow the wire to cool. Allow a drop or two of the suspected oil to fall on the loop, avoiding any contact of the latter with the fingers, let the oil ignite and leave it to burn outside of the flame. Bring the loop slowly in contact with the lower outer edge of the flame. Artificial oil will at once impart a distinct, but quite transient, green tinge to the flame (chloride of copper); while natural oil will produce at most a slight yellow color. Fritzsche Bros. (Catal. p. 9).

Oleum Anisi.

Solidification. "10 and 15° C."——14 and 19° C. Fritzsche Bros. (Catal. p. 7).

Squire corrects some of the statements of Umney (see Digest on U. S. P. 1880, p. 313), and contends that the melting point is the only constant factor connected with the congelation of this oil. Umney's observations of the colors produced by Eijkman's test (HCl in absolute alcohol) are incorrect; the difference not being between a pink and a yellowish-brown color, but between a deep-blue and a yellowish-brown. (Ph. J. & Tr. Aug. 93, 104, & A. J. Ph. 93, 504. Proc. 94, 1141.)

Optical Rotation. Slightly to the left. Helbing (Ph. Rec. No. 33, p. 8).

In regard to the statement, still met with in many text-books, that the oil of anise of commerce is largely oil of star-anise, Schimmel & Co. state that the latter plays a very subordinate part. As to the temperature at which liquefaction of the congealed oil ensues, it is best to omit any statement of a positive character, because authorities differ: Flueckiger (Ph. Chem. II, p. 419) gives 17° C., and Bornemann (Die fluechtigen Oele, 1891, p. 301) gives 6 to 18° C. Power (Circular, No. 109, p. 571), who thinks that anethol might be substituted for the oil of anise.

Oleum Aurantii Corticis.

Refractive Index. Edwards (Proc. 93, 151).

Optical Rotation. Fritzsche Bros. state from 96 to 99°. (Catal. p. 23.)——As a consequence of its high rotation the addition of a small quantity of inactive paraffin or lævo-rotatory oil of turpentine produces a very marked reduction of the rotatory power. Helbing (Ph. Rec. No. 33, p. 9).

Specific Gravity. 0.848 to 0.854. Fritzsche Bros. (Catal. p. 23).

Terebinthinate Odor. Power states that the pure oil of orange peel does not acquire a terebinthinate odor, as it does not contain a trace of pinene to which such a change is due. He further states that the pure oil is a very stable body. (Circular, No. 197, p. 1108).

Oleum Aurantii Florum.

The former statement, that this oil was obtained from the flowers of the Sweet Orange and a second quality from those of the Bitter Orange, is in direct opposition to the statement of Schimmel & Co. and other authorities. The oil from the flowers of the Sweet Orange is known in commerce as "Portugal" oil, the odor of which is different from that of "Neroli" oil.

Specific Gravity. Schimmel & Co. give the specific gravity of their own distillation as 0.881 to 0.887. Fritzsche Bros. (Catal. p. 23.)

Oleum Bergamottæ.

Refractive Index. Edwards (Proc. 93, 151).

Purity. Perfectly pure oil is hardly found in commerce. The turbidity, observed in the solution in 80-p. c. alcohol (third paragraph) is due to separation of bergapten. Schimmel & Co. (Report, April, 93. A. J. Ph. 93, 306. Proc. 93, 879).

Optical Rotation usually varies from 9 to 15°. Schimmel & Co. (Ibid.).

Specific Gravity. Expressed from overripe fruit, it has shown as high as 0.892. Schimmel & Co. (Rep. April, 1891.)

Green Color. The color of the pure oil is honey-yellow; the green color noticed is due to copper, dissolved by the acetic acid liberated from the oil. Helbing (Ph. Rec. No. 33, p. 11).

Linalool. The normal amount of the ester of linalool is 40 p. c., and it should not contain less than 38 p. c. of the acetate. Schimmel & Co. (Rep. April, 93.)——Apparently the p. c. of the ester stands in direct relation to the ripeness of the fruit. (Ph. Rev. 96, 134.)

Oleum Betulæ Volatile.

Beringer questions its identity with methyl salicylate. (A. J. Ph. 94, 12.)

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Constituents. Contains, in its unrectified state, about 99.8 p. c. of methyl salicylate, together with a very small amount of the paraffin also found in oil of wintergreen ($C_{30}H_{62}$), an aldehyde or ketone, and an ester ($C_{14}H_{24}O_2$), but does not contain the alcohol ($C_8H_{16}O$) which is found in oil of wintergreen. It does not contain any trace of benzoic acid or its esters, nor does it contain any terpene or sesquiterpene. If the oil is rectified the product would probably be practically identical with true oil of wintergreen. Power & Kleber. Fritzsche Bros. (Circ. No. 7).

Oleum Cadinum.

Soluble in aniline. Hirschsohn (Ph. Zts. Russl. 96, 817).

Oleum Cajuputi.

Refractive Index. Edwards (Proc. 93, 151).

Specific Gravity. 0.929 to 0.930. Fritzsche Bros. (Catal. p. 10).

Shaken with an equal volume of a 10 p. c. solution of soda, it is not diminished in volume.——On addition of syrupy phosphoric acid, it should become semi-solid, showing a large p. c. of cineol. Umney (Ph. J. & Tr. 95, April, 948).

Oleum Cari.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Specific Gravity. This varies with different authors. Schimmel & Co. give 0.905 to 0.915; Mierzinski, 0.917 to 0.921; Maier, 0.910 to 0.925; Williams, 0.910 to 0.913. An oil of less specific gravity than 0.910 is liable to have been deprived of some of its carvol. Power (Circ. No. 109, p. 578).

Optical Rotation. 75 to 85° to the right. Fritzsche Bros. (Catal. p. 10).

Carvol. Two Cc. of the oil, heated in a test-tube at water-bath temperature for five minutes with 1 Cc. of phenylhydrazine, solidifies to a mass of light-yellow, silky crystals on cooling. Helbing (Ph. Rec. p. 16).——Power thinks that carvol, being a definite chemical body, the properties of which can be sharply defined, might be introduced. (Circ. No. 109, p. 578.)

Oleum Caryophylli.

Refractive Index. Edwards (Proc. 93, 151).

Specific Gravity. Fritzsche Bros. give it as 1.060 to 1.067 (Catal. p. 13). Schimmel & Co.'s report states, however, that the specific gravity varies according to the method of distillation from 1.050 to 1.068, and that a really good oil should vary only from 1.050 to 1.056. (Ph. Rdsch. 95, 269.)——The range has been made 1.060–1.070.

Eugenol. Estimation. Thoms' method. (Ph. Centralh. 91, 589. A. J. Ph. 92, 508. Proc. 93, 882.)——De la Cour finds that the specific gravity has no uniform relation to the p. c. of eugenol. (Ibid.)——If the oil of cloves is to be estimated by its p. c. of eugenol, then the oil of the clove stalks, although of lower specific gravity, would be the best. (Ap. Ztg. 94, 184.)

When saponified with a 10-p. c. solution of potassa, not more than 15 p. c. should remain uncombined. Umney (Ph. J. & Tr. 95, April, 951).

Oleum Chenopodii.

The specific gravity and solubility in 70-p. c. alcohol vary with the age. The figures given in the Pharmacopœia are those of a reliable commercial oil. Power found the specific gravity of a freshly distilled oil to be 0.910, and the solution in alcohol of the above strength not clear. Fritzsche (Catal. p. 11).

Oleum Cinnamomi.

The commercial oil is obtained chiefly from the leaves, mixed with leaf stems and young twigs, which might be stated. Since the best criterion of the value of the oil is the p. c. of cinnamic aldehyde, it is interesting to note the following different p. c.: Oil of cassia bark, sp. gr. 1.035 and 88.9 p. c. aldehyde; buds, 1.026 and 80.4 p. c.; bud stems, 1.046 and 92 p. c.; leaves, stems and twigs, 1.055 and 93 p. c. Fritzsche Bros. (Catal. p. 12).——It should not contain less than 75 p. c. It is proposed to replace the oil by artificial cinnamic aldehyde. (Ph. Rev. 96, 64.)

Refractive Index. Edwards (Proc. 93, 151).

Oil of Ceylon cinnamon differs in volatile constituents according to whether it has been distilled from the leaves, root or bark. Schimmel & Co. (Rep. 93. Proc. 93, 881.)

Beringer thinks that the character of the residue left on evaporation might have been given. (See Digest on U. S. P. 1880, p. 314.) (A. J. Ph. 94, 13.)

Oleum Copaibæ.

Refractive Index. Edwards (Proc. 93, 151).

Distinction between African, Maracaibo and Para balsams. Umney (Ph. J. & Tr. 93, Sept. 216. A. J. Ph. 93, 544. Proc. 94, 898).

Should be laevo-rotatory, and soluble in its own volume of "absolute" alcohol. Umney (Ph. J. & Tr. 95, April, 951).

Specific Gravity. This can not be stated within very narrow limits, since it appears to vary considerably as obtained from different sorts of copaiba, and increases by age. The Para balsam, which is the richest in oil, is considered to yield the finest product, and Flueckiger records for this oil the sp. gr. of 0.88 to 0.91. As to its solubility, this appears to vary according to its source and age. Bornemann states it to require 50 parts of alcohol of 0.830; Nat. Disp., about 40 parts of 0.850; Ph. Russ., 25 parts of 0.830 to 0.834. Power found that not even 50 parts gave a clear solution. (Circ. No. 109, p. 582.)

Oleum Coriandri.

Refractive Index. Edwards (Proc. 93, 151).

Specific Gravity. Schimmel & Co. have found this to fluctuate as follows: From Thuringian seed, 0.874; Russian, 0.882; Italian, 0.876; Moravian, 0.874: and they give it therefore as between 0.874 to 0.882. (Circ. No. 197, p. 1109, and Catal. p. 14.)

The color reaction with nitric acid (for the detection of oil of orange peel), recommended by Eck (Chem. Centralbl. 87, p. 1086), does not appear very reliable. Power (Circ. No. 109, p. 582).

Oleum Cubebæ.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Specific Gravity. Fritzsche Bros. give 0.910 to 0.930 (Catal. p. 15); Bornemann, 0.929 for the crude oil, and 0.919 for the rectified oil. (Circ. No. 109, p. 583.)

Solubility. Hirsch questions the solubility in an equal volume of alcohol, the Russian Pharmacopœia requiring 25 parts, and the Spanish 27 parts. Power states that he has repeatedly found an equal volume sufficient. (Circ. No. 109, p. 583.)

Optical Rotation. Lævorotatory, 40°. Helbing (Ph. Rec. No. ii., p. 25).

Oleum Erigerontis.

Analysis. Meissner (A. J. Ph. 93, 420. Proc. 94, 696).

Specific Gravity. Authorities differ. Fritzsche Bros. give 0.855 to 0.890 (Catal. p. 15); Power, 0.8498; Beilstein, 0.8464 (at 18° C.); Todd, 0.855 to 0.865. Power found an old, quite thick specimen with 0.9183. (Circ. No. 109, p. 584.)

Optical Rotation. Oil of erigeron consists almost entirely of dextrogyrate limonene; the statement of Todd (A. J. Ph. 87, p. 305), where he divides the oil into a large number of fractions with lævogyrate polarization, varying from—23 to—69°, is evidently based upon incorrect observations. Power (Circ. No. 109, p. 584).

Oleum Eucalypti.

Yield. Morrison & Jackson (Proc. 94, 682).

Specific Gravity. Helbing gives it as between 0.910 to 0.930 (Ph. Rec. No. 33, p. 25), and Barbour states that some of the richest oils stand 0.910 (Ch. & Dr. 95, Mrch. 371).

Optical Rotation. The rotation is of no discriminating value, as the oil of E. globulus is dextrogyrate, while the equally valuable oil of E. oleosa is laevogyrate. Power. Fritzsche Bros. (Catal. p. 15).

Eucalyptol. Estimation. Faulding adds phosphoric acid (1.759) to the oil, when any eucalyptol present is precipitated as a solid phosphate, which is afterwards decomposed. The fractionating and freezing process he considers unsatisfactory. (Ch. & Dr. 95, Mrch. 310.) ——Helbing states that this method is unsatisfactory as a means of estimation, but that it is excellent for testing for the presence of eucalyptol: cool the oil to 0° C., and add half its weight of phosphoric acid (1.750) cautiously with constant stirring. (Ph. Rec. No. 33, p. 26.)

Other Eucalyptus Oils. Fritzsche gives the spec. grav. and boiling points of twelve varieties. (Catal. p. 16.)

Phellandrene Test. (Last paragraph.) This is not clearly worded, inasmuch as the evident intention is to reject such oils. (Ph. J. &

Tr. 93, Sept. 223.)——Power modifies this test as follows: 1 Cc. of the oil is mixed with 5 Cc. of benzin, 1 or 2 Cc. of a concentrated solution of sodium nitrite added, and subsequently glacial acetic acid added, a drop or two at a time, with vigorous shaking after each addition. If phellandrene be present in any considerable amount, its nitrite will separate from the benzin solution. Fritzsche Bros. (Catal. p. 15).

Oleum Fœniculi.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Specific Gravity. 0.965 to 0.975. Fritzsche (Catal. p. 17.)

Optical Rotation. 7° to 22° to the right. (Ibid.)

Anethol. The higher the temperature at which the crystals separate, the better the quality of the oil. (Ibid.)

Oleum Gaultheriæ.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Commercial. Examination. La Wall (A. J. Ph. 95, 373).

Optical Rotation. It should not be less than 0.25° to the left. Power & Kleber (Ph. Rdsch. N. Y. 95, 232.)

Constituents. Contains about 99 p. c. of methyl salicylate, together with a small amount of a paraffin, which is probably triacontan ($C_{30}H_{62}$), an aldehyde or ketone, an apparently secondary alcohol ($C_8H_{16}O$), and an ester ($C_{14}H_{24}O_2$). Power and Kleber. Fritzsche Bros. (Circ. No. 7).

See also remarks under "Methyl Salicylas."

Oleum Gossypii Seminis.

Refractive Index. Edwards (Proc. 93, 150).

It dissolves no inconsiderable p. c. of metallic lead. (Rep. de Ph . . . Dr. Circ. 92, 178. Proc. 93, 780.)

Specific Gravity. Wiley (Agricult. Bull. No. 13, 1889) found it to vary between 0.9218 and 0.9264; Cannizaro (Rep. on olive oil) observed 0.9235 to 0.9250; Holde (Zts. Angew. Ch. 91, p. 712) gives 0.92 to 0.922. (Circ. No. 109, p. 618.)

Subacetate of Lead Test has been found unreliable by Cannizaro, even as a test for identity (Ibid.)

Paraffin Oil. A test is wanted. (See Proc. 95, 813.)

Oleum Hedeomæ.

Analysis. Habhegger (A. J. Ph. 93, 417. Proc. 94, 892).

Refractive Index. Edwards (Proc. 93, 151).

Optical Rotation. 18.43° to 21.20° to the right. Power, Fritzsche Bros. (Catal. p. 18).

Neutrality. When fresh, the oil is neutral; but on keeping, owing to the gradual decomposition of its esters, the reaction becomes slightly acid. Power (Circ. No. 109, p. 587).

Oleum Juniperi.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Specific Gravity. 0.865 to 0.885. Fritzsche Bros. (Catal. p. 19).——The sp. gr. varies considerably according to the age of the oil, and the age and ripeness of the berries. Hirsch & Schneider (Commentar.) give 0.86 to 0.87; Flueckiger (Pharm. Chem.), 0.85 from the unripe fruit; Unger, 0.873 at 13° C.; Williams (Ch. News, 89, p. 175), 0.872 to 0.881. (Circ. No. 109, p. 588.)

Optical Rotation. Oil of juniper is either dextrogyrate, laevogyrate or inactive. Fritzsche Bros. (Catal. p. 19).

Oleum Lavandulæ Florum.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Specific Gravity. 0.883 to 0.890. Fritzsche Bros. (Catal. p. 19). The value of this oil is in direct ratio to its p. c. of ester (linaloyl acetate), which should not be less than 30 to 36 p. c. Fritzsche Bros. (Catal. p. 19).——Determination of the ester and the free linalool. (Ibid.)

Oil of Spike. The best test for this oil is the presence of cineol, which is absent in the true oil. (Ph. Rdsch. Prag. 93, 379. Proc. 94, 1155.)

Oleum Limonis.

Refractive Index. Edwards (Proc. 93, 151).

Specific Gravity. The range has been made 0.857 to 0.860.

Optical Rotation. 60 to 64° to the right. Fritzsche Bros. (Catal. p. 21). Effect on rotatory power by admixture of varying quantities of oil of turpentine. Oliveri (Gazz. Chim. 92, 318. A. J. Ph. 92, 403. Proc. 93, 884).——Barrett finds that the rotation of genuine oil may vary between 57° and 72° to the right, and that the addition of oil of turpentine was generally so skillfully made, that the difference in rotation would only be 4 or 5 degrees. What is needed, is to find some one constituent present in constant proportion. (Ph. J. & Tr. 94, Sept. 255. Ph. Era, 94, xii, 329. Proc. 95, 1033.)

Turpentine taste is stated to be removed by potassium permanganate. (Ph. Rev. 93, 59. Proc. 93, 884.)

Oleum Lini.

Refractive Index. Edwards (Proc. 93, 150).

Specific Gravity. The different authorities give it as follows: Ph. Belg., 0.930; Ph. Russ., 0.930 to 0.940; Ph. Germ., 0.936 to 0.940; Schuebler, 0.9347; Souchère (Paris Lab.), 0.9325; Allen, 0.930 to 0.935. Boiled linseed oil, 0.940 to 0.941; mineral oils, 0.880 to 0.905; and rosin oil, 0.96 to 0.99. (Circ. No. 109, p. 619.)

Paraffin Oils. The presence of alcohol enables the oil to be rapidly saponified, facilitates the subsequent separation of the ether, and prevents the formation of an emulsion. On shaking the 50 Cc. of soap solution with 50 Cc. of ether, the ethereal layer, after subsidence, amounts to but about 20 Cc. Power found that, by proceeding as recommended by Hirsch & Schneider (Commentar. p. 497), (evaporating the soap solution with sand, and extracting with ether) the soap itself becomes quite completely dissolved by the ether, and a separation of the mixed paraffin oil is impossible. (Circ. No. 109, p. 620.)

Fixed Oils. Mix 10 parts of linseed oil and 3 parts of commercial nitric acid, and allow to separate. If fish oils be present, the oily layer is dark-brown to black, whilst the acid is orange-red. If pure, the oily layer is dirty-green, and the acid golden-yellow. (Am. Dr. 95, 308. Proc. 95, 1055.)——Power considers this test unsatisfactory. (Circ. No. 109, p. 620.)——This test has been modified so as to serve as a general test for purity. Shake equal parts of linseed oil and nitric acid, and allow to stand for 20 minutes. If pure, the upper layer will be of a straw color, and the lower layer perfectly colorless. (Merck, Rep. 93, 39.)

Rosin Oil. Filsinger recommends the polariscope. Oil from German or Indian seed is quite inactive, while rosin oil is dextrogyre. (Ch. Ztg. 94, 1005. Proc. 95, 1055.)

Fixed Oils in General. Power states that the most reliable test is undoubtedly the iodine absorption test, as linseed oil has the highest iodine number of common fixed oils; but this test is too circumstantial and delicate for the average pharmacist. (Circ. No. 109, p. 620.)

Oleum Menthæ Piperitæ.

Refractive Index. Edwards (Proc. 93, 151).——Stahre (Ph. Ztg. 93, 214, & 94, 1157).

Specific Gravity. Stahre gives the specific gravity of 22 samples, ranging from 0.904 to 0.921. (Ph. Ztg. 93, 214. Proc. 94, 1157.)

——Fritzsche Bros. (Catal. p. 25), for oils from various European and other localities, give from 0.903 to 0 925.——Schimmel & Co. give the following figures: Mitcham, 0.905 to 0.910; German, 0.895 to 0.920; French, 0.920; American, 0.910 to 0.920; Japanese, 0.890 to 0.910. (Report, Ph. 93, 214. Proc. 94, 1158.)——The limit of the Pharmacopœia is necessarily wide, in order not to exclude a good Mitcham oil, and allowing something for a not perfectly fresh oil. Power (Circ. No. 109, p. 591).

Optical Rotation. For various oils from 9.45° to 34.45° (the last a Japanese oil). Fritzsche Bros. (Catal. p. 25).

Menthol. A good oil should not contain less than 50 p. c. of menthol. For estimation, see Fritzsche Bros. (Catal. p. 27).

Japanese Oil. Is hardly adapted for internal use, notwithstanding its high p. c. of menthol, because of its peculiarly bitter taste. Ibid. p. 29.)

Constituents. Power & Kleber (Ph. Rdsch. N. Y. 94, 157. Fritzsche Bros., Circ. No. 3).

Nitric Acid Test. The time "three" hours is hardly sufficient: it should be "ten" hours. Beringer (A. J. Ph. 94, 13).

Iodine Test. The oil "does" not fulminate with iodine; it would be more correct to state that it "should" not; old oil certainly fulminates. (Ibid.).

Oil of Copaiva. A test should be given.

Resin. On evaporation, it should not leave more than 4 p. c. of residue. Stahre (Ph. Ztg. 94, 154).

Oils of Erigeron or Erechthites. The red color test on adding solution of potassa (Vigier & Clotz) does not appear to be reliable. Power (Circ. No. 109, p. 592).

Oleum Menthæ Viridis.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Identity. Two Cc. of the oil, heated in a test-tube at water-bath temperature, for fifteen minutes with 1 Cc. of phenylhydrazine and 1 Cc. of acetic acid, deposits silky, yellow crystals on standing. Helbing (Ph. Rec. No. 33, p. 36).

Specific Gravity. 0.929 to 0.940. Fritzsche Bros. (Catal. p. 33).

Oleum Morrhuæ.

Constants. Parry & Sage (A. J. Ph. 95, 470).

Alkaloids. These pre-exist in the hepatic tissue. Bouillot (Ph. J. & Tr. 93, April, 807. Proc. 93, 843).

There is no reason why the oil from the American cods should not be used in place of the Norwegian oil. Sherrard (A. J. Ph. 95, 491. Proc. 95, 318 & 329).

It would not be out of place to give a test for oil deprived of the alkaloids, there being quite a quantity in the market.

Mineral Oil. A test would appear necessary, adulterations have been reported both in Europe and here. (Bull. Ph. 96, 41.)

Oleum Myrciæ.

Refractive Index. Edwards (Proc. 93, 151).

Solubility. It dissolves clear in alcohol. Power (Ph. Rdsch. N. Y. 95, 63).

Oils of Cloves and Pimenta. The test with sulphuric acid and diluted alcohol is totally unreliable. Fritzsche Bros. (Catal. p. 22).

Specific Gravity may occasionally be as low as 0.965, but generally ranges between 0.975 and 0.985. (Ibid.)

The characters of this oil vary considerably, depending upon the season of the year in which the leaves are collected, and upon the age. (Ibid.)

Purity. As the pure oil does not contain pinene, this fact may be made use of for the detection of oil of turpentine and other oils containing considerable amounts of pinene. Fritzsche Bros. (Circ. No. 6).

Oleum Myristicæ.

Refractive Index. Edwards (Proc. 93, 151).

It should leave a crystalline residue, when evaporated on a water-bath. Umney (Ph. J. & Tr. May, 95, 1039).

Specific Gravity. 0.870 to 0.900. Fritzsche Bros. (Catal. p. 23).

Oleum Olivæ.

Refractive Index. Edwards (Proc. 93, 150).

Commercial. Examination. Parry & Eastcourt (Ch. & Dr. 93, 488. A. J. Ph. 93, 231. Proc. 93, 894).

Cottonseed Oil. Dissolve 1 Gm. in 10 Cc. of benzin, and shake with 1 drop of concentrated sulphuric acid. The color of the pure oil will be slightly darker; in presence of cottonseed oil the color is dark-brown, nearly black. Gantter (Ph. Ztg. 95, 75. Proc. 95, 1054).

Sesame Oil. Shake with Bettendorf's reagent and heat on a water-bath for a few minutes; a red coloration indicates sesame oil, pure olive oil turns orange-yellow. Soltsien (Ph. Ztg. 93, 654. A. J. Ph. 94, 32. Proc. 94, 1182).——Shake vigorously a mixture of olive oil with an equal part of solution of pyrogallic acid in hydrochloric acid

(1:14 of 1.124), and set aside until separation. Draw off the upper layer, and boil the lower for 5 minutes. The pure oil has a yellow color: sesame oil a purple color. (J. de Ph. & Ch. 93, 134. Proc. 94, 1181.)——Mix 0.1 Cc. of alcoholic furfurol solution (2 p. c.) with 10 Cc. of the oil and 1 Cc. of hydrochloric acid, then add 10 Cc. of chloroform. The bottom layer will acquire a carmine-red color, even when the oil contains as little as 1 p. c. of sesame oil. When the oil is pure, the layer will either be uncolored, or become a greenish color. Villaveccia & Fabris (Ph. Post, 93, 538).

Castor Oil. Shake with an equal volume of alcohol, and allow to separate. If pure, the oily layer is increased; in the presence of castor oil the increase is in the alcoholic layer. Leonardi (Ph. Ztg. 93, 705. Proc. 94, 1181).——Heat the oil with a concentrated alcoholic solution of potassa; in presence of castor oil the odor of acrylic alcohol will be noticed.

Paraffin Oils Saponify with alcoholic solution of potassa, and dry the product at 80 to 90° C. Powder, mix with sand, and exhaust with benzin, which has no action upon soap. Charpentier (Bull. Ch. Belg. Ph. Era, 95, xiv, 683).——Much of the olive oil contains up to 25 p. c. of paraffin oil, which is added to the crushed olives before expressing. (Zts. Oest. Ap. Ver. 93, 365.)

Free Acid. Olive oil should not contain more than 5 p. c. of free acid, calculated as oleic acid, when titrated with standard solution of potassa; the oil being shaken with alcohol, and titrated with phenolphtalein as indicator. Parry (Brit. & Col. Dr. 94, 282. Proc. 95, 1056).

Oleum Phosphoratum.

Chloroform is preferable to ether, being a better solvent. Beringer (A. J. Ph. 94, 14).

Luminosity This statement is found in several text-books; it cannot apply to the preparation of the U. S. Ph., because ether will prevent all luminosity. Power (Circ. No. 109, p. 625).

If 1 part by weight in 100 parts by volume is wanted, then the proportions would be: 1 Gm phosphorus, 10 Cc. stronger ether and 90 Cc. oil of almonds. The p. c. by weight would then be 1.09 to 1.10. Power (Circ. No. 109, p. 624).

Oleum Pimentæ.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Specific Gravity. 1.040 to 1.050. Fritzsche Bros. (Catal. p. 29).

When treated with solution of potassa, not more than 25 p. c. should remain uncombined. Umney (Ph. J. & Tr. 95, May 1041).

Oleum Ricini.

Refractive Index. Edwards (Proc. 93, 150).

Commercial. Examination. Parry & Estcourt (Ch. & Dr. 93, 488. A. J. Ph. 93, 231. Proc. 93, 894).

Cultivation in Georgia. Davenport (A. J. Ph. 95, 624).

Identity. Mix a few drops of the oil with as much nitric acid, and after finished reaction neutralize with sodium carbonate. After the odor of nitrous acid has disappeared, the odor of œnanthylic acid will be noticed. Draper (Ph. Ztg. 94, 549).

Oleum Rosæ.

Specific Gravity. At 20° C. 0.855 to 0.865. Fritzsche Bros. (Catal. p. 29).

Ethyl Alcohol is not a natural constituent of rose oil, but very likely due to incipient fermentation in the leaves between the gathering and distilling. Poleck (Berichte, xxvi. p. 38. Ph. J. & Tr. 92, Oct. 353. Proc. 93, 889).

German Oil. Schimmel & Co. (Ph. J. & Tr. 93, Sept. 262. Proc. 94, 1159.)

Bulgarian Oil. Chemistry. Markownikoff (Ap. Ztg. 93, 638. A. J. Ph. 94, 143. Proc. 94. 1158).

Sulphuric Acid Test. Power recommends to increase the quantity of alcohol to 5 Cc. Fritzsche Bros. (Catal. p. 30).

The name of the botanist attached to the plant name is correctly given as "Miller" (see Gard. Dict., ed. VIII, No. 15. Also the Kew Index). "Mueller" as given by Flueckiger (Pharmakognosie, III ed., p. 167) is an error.

Stearopten. No very definite statement can be made regarding the congealing and melting point, for the amount varies considerably. The fine oil, produced by Schimmel & Co., is very rich in stearopten, but by a mechanical process a large proportion or even the entire amount of this body is now separated. The best test for its detection is its saponification with an alcoholic solution of potassa, but this test requires too much oil. Power (Ibid.).

Oleum Rosmarini.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Optical Rotation. Rosemary oil is slightly dextrogyrate, not more than 10° in a 100 Mm. tube. Helbing (Ph. Rec. No. 33, p. 42).

Specific Gravity. 0.900 to 0.910. Fritzsche Bros. (Catal. p. 30).

Oleum Sabinæ.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Specific Gravity. 0.905 to 0.930. Fritzsche Bros. (Catal. p. 32).

Oleum Santali.

Specific Gravity. 0.975 to 0.980. Fritzsche Bros. (Catal. p. 31).

Optical Rotation. 17° to 20°. (Ibid.)

Cedar-wood Oil. Beringer finds that Durand's ammonio-copper solution indicates easily 3 to 5 p. c. of cedar-wood oil. (A. J. Ph. 94, 14.)——Five drops, mixed with 2 drops of sulphuric acid, yields a viscid liquid, rapidly turning solid, and of a light-blue or greenish color. In presence of cedar-wood oil, the mass does not solidify entirely, and turns much darker. Mesnard (Ap. Ztg. 93, Repert. p. 27. Proc. 93, 891).——Parr considers Mesnard's test a failure. (Ch. & Dr. 95, Aug. 223.)

Purity. Two drops, mixed with 6 drops of nitric acid (1.5), shows a yellow or reddish-brown color, without any green, indigo or violet color at the edges during five minutes. Cripps (Ph. J. & Tr. 92, Dec. 461. A. J. Ph. 93, 24. Proc. 93, 891).

Valuation. The best valuation is the p. c. of santalol. Convert the alcohol into an acetate, determine the amount of acetic acid present in the acetylated oil, and express the result in terms of potassa necessary to saponify the oil. Parry (Ph. J. & Tr. 95, Aug. 118. A. J. Ph. 95, 469).

Oleum Sassafras.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Specific Gravity. Williams found this oil to vary from 1.056 to 1.09, which will serve to distinguish it from the oil of camphor, the sp. gr. of which is only 0.89 to 0.97. (Circ. No. 109, p. 604.)

Artificial Oil. The so-called "artificial" oil of sassafras is not a synthetical product, but a fractionation part of oil of camphor. (Ibid.)

Safrol. Power recommends the introduction of safrol as a substitute for the oil; being a definite chemical body, its purity can be readily ascertained. (Ibid.)

Oleum Sesami.

Refractive Index. Edwards (Proc. 93, 150).

Solubilities should be mentioned.

Botanical Name. Both Flueckiger & Hanbury (Pharmacographia) and Luerssen (Med. Ph. Bot. II, p. 1010) give "De Candolle" instead of "Linné." Power (Circ. No. 109, p. 627.)——See, however, O. Kuntze, Gen. Plant. p. 481. Rice (Ibid.).

Oleum Sinapis Volatile.

Chemistry. Sayre (A. J. Ph. 95, 532).

The traces of carbon disulphide which have been observed to exist normally in this oil, are not considered to interfere with the test given for its detection. Power (Circ. No. 109, p. 605).

Oleum Terebinthinæ.

Refractive Index. Edwards (Proc. 93, 151).

Specific Gravity. 0.855 to 0.876. Fritzsche Bros. (Catal. p. 34).

Optical Rotation. The American oil is dextrogyre, which distinguishes it from the French oil, which is lævogyre. Fritzsche Bros. (Catal. p. 34).

Commercial. Examination. La Wall (A. J. Ph. 95, 373).

Benzin. A test for benzin is wanted. Beringer (A. J. Ph. 94, 14).

Oleum Terebinthinæ Rectificatum.

"No weighable residue on evaporation." Ten Cc. of the freshly rectified oil, when evaporated on a water-bath, should not leave a residue, weighing more than about 0.02 Gm. Fritzsche Bros. (Catal. p. 35). Power advises to put this at 0.05 Gm.

Oleum Theobromatis.

Melting Point. Although the melting point in a sealed tube was found by Graf (Arch. Ph. 88, 883) to be 33.5° to 34.5°, it has been stated in the U. S. Ph. as 30 to 33° C., because such determinations are usually made in an open tube. Power (Circ. No. 109, p. 628). ——The melting point appears to be dependent on the mode of extracting, and especially on the heat to which the beans were subjected. Extracted by ether from unroasted nibs, it was found to be 30° C. Clague (Ph. J. & Tr. 92, Sept. 247. Proc. 93, 704).

Paraffin. Is the ether test for paraffin reliable? Paraffin is easily soluble in ether. (Ph. Ztg. 96, 109.)

Oleum Thymi.

Refractive Index. Edwards (Proc. 93, 151).

Yield. Morrison & Jackson (Proc. 94, 682).

Specific Gravity. The sp. gr. of oils from various sources (German, French and Spanish) varying from 0.909 to 0.950. See

Fritzsche Bros. (Catal. p. 33).——It is higher when distilled from the fresh herb. A sp. gr. below 0.890 would indicate that the oil had been deprived of a portion of its thymol. The statement occasionally met with, that the alcoholic solution of the oil should *not* be colored yellowish-brown by ferric chloride, is a mistake, which has been pointed out by several authorities. This color reaction is due to the presence of a phenol, presumably carvacrol, which is always present in the oil. Power (Circ. No. 109, p. 610).

Oleum Tiglii.

Specific Gravity. The German Ph. Comm. has found with oils of their own expression the figures 0.944 to 0.955, while commercial oils believed to be pure varied from 0.941 to 0.960. Power (Circ. No. 109, p. 629).

Solubility. Kobert (A. J. Ph. 87, 346) has shown, that no definite solubility in alcohol can be given, as this is influenced by the extent of the decomposition of the glyceride of crotonolic acid, and that old oils in consequence may be soluble in all proportions of alcohol. Power (Ibid.).

Both Hirsch & Schneider (Comment. p. 493) and Beckurts & Hirsch (Handbuch, p. 307) state that when 3 drops of the oil are mixed with 2 Cc. of sulphuric acid, the mixture should remain clear, is found by Power to be of no value, since he obtains clear mixtures both with castor, olive and cottonseed oils. (Circ. No. 109, p. 630.)

Opii Pulvis.

Granulated Opium. Kebler strongly recommends the introduction of this article. (A. J. Ph. 95, 554.)

Requirements of Ph. Helvetica. Water should take up not less than 55 p. c. Dried, it should not lose more than 8 p. c. The temperature at which the opium is dried, should not exceed 50° to 60° C. It should contain from 10 to 12 p. c. of morphine. (Ph. Rdsch. N. Y. 94, 67.)

Opium.

Moisture. The p. c. of moisture allowable should be given, and also the yield of extract. Beringer (A. J. Ph. 94, 15).

Microscopical Examination. Dohme finds that the microscopical examination offers no reliable data for distinction. (Proc. 175.) ——Mjoen, on the contrary, distinguishes the commercial varieties as follows: Asia Minor contains fragments of the capsules; Persian contains no capsules, but much starch of leguminous seeds, or of cereals; Indian and Chinese contain neither fragments nor starch. (Arch. Ph. 95, 539. Am. Dr. 96, 46.)

Heat. Hager points out that by heating with water, oxygen will be gradually absorbed, and the narcotic strength reduced. (Ph. Ztg. 93, 250. Proc. 93, 680.)

Opium Mitigatum. Hager proposes a "mild" opium, by heating opium with half its weight of water to boiling, till dry. (Ph. Ztg. 93, 250. Proc. 94, 922.)

Japanese Opium. Assayed from 10 to 12 p. c. of morphine. Nyens (Ap. Ztg. 92, 454. Proc. 93, 681).

Bulgarian Opium. Has been found to assay from 7 to 9 p. c. of morphine by Flueckiger's process. Strzyzowski (Ph. Post, 96, 1).

Assay. Moerck reviews the various processes proposed, and makes the following suggestions for what is wanted: 1. Test for the purity of the weighed morphine. 2. Information as to the necessary time for the maximum precipitate of morphine. 3. Information as to the quantity of morphine left in the mother-liquor. 4. Nature of the second precipitate and its effects, if the assay be allowed to stand until further precipitation takes place. 5. Error involved by the solubility of the morphine impurities in the lime water test for purity. (A. J. Ph. 94, 433. Proc. 95, 548.)

Beringer recommends to add a test for the purity of the morphine. (A. J. Ph. 93, 468). Also Kebler (Ibid. 94, 136. Proc. 94, 554.)

Kebler. Gives preference to the various methods in the following order: 1. Ash method. 2. Titration. 3. Lime water method. 4. Absolute alcohol. He finds that there is a decided increase both in impurity and morphine as the time increases. He states, however, that allowing from 12 to 16 hours for the precipitation, and adhering closely to the text of the U. S. P., the amount of impurity, associated with the morphine, will not exceed the amount lost during the operation, so that a correction for a well-executed assay is unnecessary. (A. J. Ph. 95, 398, & 96, 257.)

Squibb cautions against carrying the principle of errors correcting each other into any important process. (Am. Dr. 95, April, 204.)

A. P. A. Committee. After the words "another portion of 10 Cc. of ether" (p. 292, sixth line from bottom) add: "let the ether on the filter and crystals evaporate completely," and after the words "more than about 10 Cc. in all" (second line from bottom) add: "use a feather to remove the crystals that adhere to the flask." (A. J. Ph. 95, 485. Proc. 240.)

Dott. Digest with water to which barium chloride has been added, filter, remove excess of barium by dilute sulphuric acid, neutralize the filtrate with ammonia, add ether-alcohol and ammonia in excess, wash the precipitate with benzol or chloroform, dry and weigh. (Ph. J. & Tr. 94, April, 847. Proc. 94, 552.)

Cannepin & Van Eijk call attention to some losses occurring in the ordinary processes. A portion of the alkaloid remains in the alcohol when ammonia is used as a precipitant, which amounts to from 0.07 to 0.17 Gm. for each 100 Gm. of opium. The opium is, also, very rarely exhausted. They give also a process with slaked lime and morphinated water. (Bull. Soc. Ch. 93, 437. Proc. 94, 553.)

Schacherl prefers Flueckiger's to the Dieterich-Helfenberg process, because the morphine obtained is purer, but Flueckiger's process gives too low results. This may be remedied by decreasing the proportion of alcohol. Helfenberg's process gives too high results by direct weighing, which, however, can be checked by titration. (Ph. Ztg. 94, 687.)

Dieterich states that the morphine obtained by Flueckiger's process contains up to 6 p. c. of narcotine, and that any decrease in the proportion of alcohol would increase the amount of impurities. (Ibid.) He says, further, that he has obtained better results by his own titration method, than by either Flueckiger's or Flueckiger-Schacherl's methods. (Ph. Centralh. 95, 21. Proc. 95, 549.)

Wainwright states that the lime-water test would be improved by titration with oxalic acid. (Am. Dr. 95, Febr. 72.)

Mendeni finds that Teschemacher's process is the best, but recommends to wash the dried opium with chloroform, before extracting it with water. (Boll. Chim. e Farm. 95, 549. Ph. Ztg. 95, 742.)

Loof proposes to use salicylate of sodium to facilitate the extraction of the morphine. 5 Gm. of powdered opium are triturated with 5 Gm. of water, and rinsed into a flask with sufficient water to make a total weight of 44 Gm. Shake for 15 minutes, and filter through a 10 centimeter filter. To 42 Gm. of the filtrate add 1 Gm. of sodium salicylate, and shake well for a short time. The resinous substances and part of the narcotine conglomerate. Filter, and shake the filtrate with 3 Gm. of ether and 1.5 Gm. of ammonia for ten minutes. Collect the morphine, and wash it twice with a little water. After drying, drop benzol on to it to remove the narcotine. The morphine obtained is white and pure. The sodium salicylate facilitates the precipitation of the resinous matter. (Ap. Ztg. 96, 192.)

Stillwell points out that much depends on the kind of filtering paper used. Some papers filter very quickly, while others may make a difference of one hour or more, which difference will necessarily vitiate the result. (Ph. Ztg. 95, 157.)

Committee on Revision. For an improved lime and ammonium chloride process, see Circular No. 174, p. 1041.